DOCUMENT RESUME

ED 445 315 CS 014 062

TITLE	Building on the Best, Learning from What Works: Five Promising Remedial Reading Intervention Programs.
INSTITUTION	American Federation of Teachers, Washington, DC.
PUB DATE	1999-07-00
NOTE	26p.; Printed on colored paper.
AVAILABLE FROM	American Federation of Teachers, AFL-CIO, 555 New Jersey Avenue, NW, Washington, DC 20001. Web site: http://www.aft.org.
PUB TYPE	Guides - Classroom - Teacher (052) -- Reports - Descriptive (141)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Classroom Techniques; *Early Intervention; Grade 1; *High Risk Students; Primary Education; *Reading Instruction; *Reading Programs; *Reading Skills
IDENTIFIERS	Direct Instruction; Exemplary Center for Reading Instruction UT; Program Characteristics; Reading Recovery Projects

ABSTRACT

This paper describes five promising remedial reading intervention programs. Each program has its own strengths and weaknesses, but all show evidence of high standards, effectiveness, replicability, and support structures. Direct Instruction is a highly structured instructional approach, designed to accelerate the learning of at-risk students. Early Steps is an early intervention/tutorial program in reading and language arts for first-grade students who are at risk for reading failure. Exemplary Center for Reading Instruction is designed to improve students' ability to read, understand and communicate in English. The Lindamood-Bell method is designed for students with reading disabilities who also have unreliable auditory perceptions, teaching alternate ways to perceive various sounds that make up words in the English language. Reading Recovery is a one-on-one tutorial for first graders who perform at or below the 20th percentile in reading. Contains 39 references and 5 tables of data. Selected resources and contact information is presented for each program. (EF)

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Building on the Best, Learning from What Works

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Five Promising Remedial Reading Intervention Programs

aft American Federation of Teachers

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Building on the Best: Learning from What Works

The AFT has gained many allies in the fight to educate all students to high academic standards. President Clinton has made standards a top priority, and virtually every state has begun to take action. Where standards-based reforms have been in place, progress is being made. Yet there remains sharp debate over the future of public education.

Invoking the specter of failing schools, the advocates of vouchers and privatization are more strident than ever. But their solutions are just the latest additions to the long list of unproven schemes that have plagued our schools. The real hope for improving public education is by expanding the reach of those programs and strategies that have a track record of effectiveness—not by gambling on vouchers or privatization.

We know that our students are as capable as any in the world. We know that, given the standards-based reforms that we advocate—and the research-based strategies that can help students meet those standards—our public schools can match or surpass the accomplishments of the highest-achieving nations.

This series, which grew out of the work of the AFT Task Force on Improving Low-Performing Schools, is an attempt to help advance these reform efforts. It was designed to provide members with detailed background information about the research-based programs that, when properly implemented, show promise for helping to raise academic achievement, especially for struggling students.

While each low-performing school has a somewhat different set of needs and priorities, the AFT believes that no school—especially one that is already foundering—should be expected to find success by reinventing the wheel. Instead, once the school's most pressing problems have been identified, the improvement process should focus on enabling the faculty to choose among those programs and instructional practices that have a solid base of research showing positive results. This series, therefore, aims to help school staff become educated consumers of educational programs and practices.

In recent months, educators, members of Congress, and the general public have devoted increased attention to these issues. We hope that this focus will spur new program development efforts—together with the careful field tests that can help demonstrate the effectiveness of fledgling programs—which should mean that a broader range of good options will soon be available.

Here, we describe five promising remedial reading intervention programs.

Five Promising Programs for Remedial Reading Intervention

Why are some schools effective at educating most students, even those from disadvantaged, high-poverty areas, while others struggle fruitlessly to fulfill their academic mission? How can schools replicate the successes of their more effective counterparts?

Researchers, working for years to answer these questions, have described the characteristics of successful schools—e.g., high expectations for all students; challenging curricula; clear standards and a coherent, focused academic mission; high-quality professional development aligned to the standards; small class sizes, especially in the early grades; an orderly and disciplined learning environment; a supportive and collegial atmosphere; and an intervention system designed to ensure that struggling students can meet the standards. But, while we now know a great deal about *which* reforms are effective, comparatively little is known about *how* to achieve them.

As many schools have found out the hard way, systemic reform is extremely difficult—especially when it must occur simultaneously on many fronts, and is begun without benefit of high-quality curriculum materials, appropriate professional development, or readily available technical assistance. In fact, a number of schools—especially those that are already foundering—have found that lasting improvement is impossible without concrete, step-by-step implementation support.

According to a recent study of efforts to raise academic achievement for at-risk students (Stringfield, et al., 1996), the reform strategies that achieve the greatest academic gains are those chosen and supported by faculty, as well as administrators. Success is also dependent on the existence of a challenging curriculum, and on paying "a great deal of attention to issues of initial and long-term implementation, and to institutionalizing the reforms." This and other studies have also found that schoolwide reforms tend to be more effective than pull-out or patchwork programs, and that externally developed programs—particularly those with support networks from which schools can draw strength and tangible assistance—tend to do better than local designs.

Given these and similar research findings, we developed the criteria below to help identify promising programs for raising student achievement, especially in low-performing schools. You will find descriptions of five reading intervention programs on the following pages. Although each particular program has its own strengths and weaknesses, all show evidence of:

- **High Standards.** The program helps all students acquire the skills and/or knowledge they need to successfully perform to high academic standards.
- **Effectiveness.** The program has proven to be effective in raising the academic achievement levels of "at-risk" students in low-performing schools, based on *independent* evaluations.
- **Replicability.** The program has been *effectively* implemented in multiple sites beyond the original pilot school(s).
- **Support Structures.** Professional development, materials, and ongoing implementation support are available for the program, either through the program's developer, independent contractors, or dissemination networks established by schools already in the program.

In addition to information about each program's track record on raising student achievement, we have also attempted to gather and report details about main features and estimated costs. We hope that this information will assist members as they begin weighing the available options against student needs, school goals, and available resources. In deciding which programs warrant further investigation, we urge that you consider each program's "fit," as well the data on its efficacy and cost-effectiveness.

Direct Instruction (DI)

Grades Covered	Primarily an elementary school (pre-K-6) program, but also used successfully with secondary and adult special education and remedial students.
Curriculum Materials	DI has generally been implemented as a schoolwide, subject area, and/or remedial elementary school program. However, the reading intervention program—Corrective Reading—can be used with struggling students from grade 3 through adulthood. (Corrective Spelling is also available for grades 4 through 12).[1]
Instructional Support/ Professional Development	Professional development and implementation support of differing levels of quality can be contracted from various providers.
School Reform/ Restructuring Assistance	Not applicable for remedial use. (For use as a schoolwide reform, limited assistance can be contracted from some providers as part of their implementation-support package.)
Role of Paraprofessionals	Trained classroom paraprofessionals can be fully integrated into the program, working as instructional aides, one-on-one tutors, and small group leaders under the direction of certified teachers.
Cost of Implementation	For use as a remedial reading intervention, start-up costs for all student and teacher materials range from $25 to $40 per student. (In subsequent years, materials are approximately $10 per student.) Initial staff development costs range from $5,000 to $60,000 per school, depending on the type of implementation and the number of teachers and classrooms involved. Additional costs may include release time, depending on the implementation.
Results*/Effect Size[2]	Studies show reading improvement ranging from +.32 to +1.11. **To give a sense of scale, an effect size of +1.00 would be equivalent to an increase of 100 points on the SAT scale or 15 points of IQ—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (the norm for mainstream students).*

Direct Instruction (DI) is a highly structured instructional approach, designed to accelerate the learning of at-risk students. Curriculum materials and instructional sequences attempt to move students to mastery at the fastest possible pace. The oldest version of the program, Distar, was developed in the 1960s as part of Project Follow Through, a massive educational initiative of President Johnson's War on Poverty. Despite its success in raising student achievement levels, Distar was heavily criticized for being too rigid; concentrating too heavily on the basics; and for some vendors' poor implementation practices, such as selling it without support as a "teacher-proof" program. As DI, the original Distar program has been expanded and enriched. Although the early mastery of basic skills is still a key element, the program also addresses students' general comprehension and analytic skills. Although a number of schools have adopted DI as a schoolwide reform program, its components are more often purchased for separate implementations as language arts or remedial read-

ing programs. Either way, adequate professional development, ensuring that practitioners understand what the program is and how it works, is essential for successful implementation.

Main Features

Scripted lesson plans—Classroom scripts are a hallmark of Direct Instruction; the scripts are written, tested, rewritten, retested—polished in a cycle of classroom field testing and revision that ends only when trials show that 90 percent of students grasp a lesson the first time around. Without proper orientation, many teachers find this level of prescriptiveness off-putting. The idea, however, is to ensure that even beginning teachers will be successful and to allow veteran educators to fill any holes in their teaching skills. With curricular and pedagogical details presented in precise relationship to each other, the program offers a template of how to teach particular skills and content. It is a template that can be applied to other curricula or modified to better suit the needs of a particular group of students, but only after the teaching methods have been learned to precision.

Research-tested curriculum—In DI, skills are taught in sequence until students have fully internalized them (what cognitive researchers call "automaticity") and are able to generalize their learning in new, untaught situations. Each lesson sequence is extensively field tested to determine the most effective and efficient way to lead students to mastery. For example, the first reading and language arts lessons focus on phonemic awareness, which are followed by increasingly complex phonics and decoding lessons, which are followed by lessons that focus on comprehension and analysis of content, etc. With each lesson building on previously mastered skills and understandings, teachers are able to dramatically accelerate the pace of learning, even for the most disadvantaged students. New material is usually introduced through teacher presentations to the whole class or small groups, followed by guided practice and frequent checks for individual student mastery. Once the skill has been learned to the point of automaticity, cognitive studies show that it is transfered from short-term to long-term memory, thus freeing children to apply their learning, attend to content and move on to progressively more difficult and higher-order skills. The regular classroom reading and language arts curriculum, particularly in the later grades, has been criticized for not containing a broad or challenging enough selection of children's literature. The classroom and remedial programs are easily supplemented, however, especially after students have been helped to master basic decoding skills.

Coaches/facilitators—Another feature of the program, particularly in schoolwide and regular classroom implementations, is the use of in-class coaches. The coach periodically monitors classes and is available to assist individual teachers with any problems. (In some cases, this role has been filled by an employee of the contractor, retained to help with implementation. In some multi-school implementations within a single district, teachers are released from regular classroom duty, given special training and assigned to assist one or two schools.)

Rapid pace—Because the goal of DI is to move students to mastery as quickly as possible, a large proportion of classroom time is spent on fast-paced teacher-directed instruction, punctuated by rhythmic choral-group and individual-student responses. For instructors, this means a very full work day. For example, DI teachers in a regular classroom might ask 300 or more questions in six small-group sessions each day and to perform reading checks every five or 10 lessons to ensure that all students reach 100 percent mastery. This level of interaction, which produces substantial achievement gains, is made possible by the use of the heavily researched, highly refined scripts.

Achievement grouping—New students are given a diagnostic assessment, which is also used as a placement test. Students are then grouped by performance level, with the idea that all students will progress at the fastest possible pace and no students will be left behind. If the program is implemented well, these should not be rigid "tracks" but flexible achievement groups, with students who are progressing quickly periodically reassigned to a faster group and intensified assistance given to students who are struggling.

Frequent Assessments—Frequent assessments are also built into the program as a means to ensure that all students are reaching mastery, to detect any student whom might need extra help and to identify students who need to be re-grouped.

Results

Although Direct Instruction has been evaluated among many populations over the years, the following only addresses the use of DI as a remedial reading intervention or as a regular education program serving a student population composed of a very large proportion of struggling readers. One study followed the effects of DI on a rural population of third-grade students from 1973 to 1980.[3] Results showed that DI students outscored their counterparts in a comparison group by ES=+.61.[4] Another study of mildly retarded students[5] showed DI students outscoring control group students by ES=+.64. A third study, evaluating the effects of DI on both reading and spelling,[6] showed DI students outperforming a control group by ES=+.75. A fourth study[7] also showed DI students outscoring a control group in spelling and reading, this time by ES=+.32.

A summary meta-analyses of Direct Instruction[8] showed overall large effect sizes for students in regular education (ES=+.82) and special education (ES=+.90). DI also showed large effect sizes when used with struggling middle and junior high school students (ES=+1.11).

Case Study

Goethe Middle School (Sacramento, CA)—With chronically low test scores across the curriculum, Goethe Middle School recently decided to attack its academic problems at their root: Many students had never learned to read well. Beginning with the 1997-98 school year, Goethe took a radical step. It trained all instructional staff in Corrective Reading and used fourth period for a mandatory reading class for virtually every student. Although this DI implementation is still too new to judge, preliminary data are encouraging. In the fall of 1997, only 11 percent of Goethe students could read above a sixth-grade level, while 12 percent were at a "high average" level for sixth grade. In other words, fewer than one in four students had much hope of keeping up with the reading assignments usually required of middle school students. By the end of the school year, the number of students reading at least at this basic level had more than doubled: 22 percent were at the "high average" level, 26 percent were above.

Considerations

This is a highly interactive, teacher-intensive approach to education. Teachers and paraprofessionals must be informed about—and prepared for—its fast pace and the structured, repetitive nature of the program.

DI also has a history of problematic implementations. When the program's developer, former preschool teacher Siegfried Engelmann, started designing the curriculum more than 25 years ago, he included fully scripted teachers' guides, believing that they could serve as prototype demonstrations for specific teaching skills. In other words, one design objective was to provide hands-on teacher training during class time, thus reducing start-up costs and at the same time ensuring that all teachers would have the skills necessary to reach the maximum achievement levels. Unfortunately, some marketers and administrators interpreted this to mean that no training was necessary, and that teaching skill was inconsequential to the success of the program. DI materials were sold as "teacher-proof," leaving administrators who didn't understand the program to impose it in a rigid, dictatorial manner. Educator horror stories and lower-than-expected achievement levels were the predictable results. In some regions, this has left DI with a tarnished reputation that will have to be clarified and overcome. For any new implementation to be successful, proper orientation and ongoing training are vital—not only for teachers and paraprofessionals but also for administrators.

Another frequent criticism is that DI provides so much structure and regimentation that it stifles student and teacher creativity. The student results—both in higher academic achievement levels and elevated measures of self-esteem—should speak for themselves. Teacher focus groups, following multiple schoolwide DI implementations in Broward County, Florida, are also instructive. Some teachers felt that the "standardized approach actually allowed more creativity, because a framework was in place within which to innovate," and said that they could do more with content once DI had helped students acquire the necessary skills. Other teachers reported that they had initially been resistant, feeling that "even though the students thrived on it, the repetition was boring for the faculty," but, over time, had

found ways "to innovate within the repetition, so that they become drawn in as well."[9]

The Broward implementation also incorporated another important feature: advanced training for and assignment of teaching staff to act as full-time "coaches" (facilitators) for the new DI schools. By retaining their status within the bargaining unit, it was made clear that these educators were a resource for the benefit of the teaching staff, not administrators. There was always someone to turn to, on a confidential basis, for advice and assistance. Given the inevitable frustrations, glitches and misunderstandings that arise when implementing any new curriculum, using new instructional methods, this assistance has proven invaluable.

Selected Resources

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Effective School Practices. *Journal of the Association for Direct Instruction.*

Gersten, Russell, et al. "Effectiveness of a Direct Instruction academic kindergarten for low-income students," *The Elementary School Journal* (November 1988).

For more information

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E-mail: ADIhome@aol.com.
Internet: http://www.adihom.org or http://darkwing.uoregon.edu/~adiep.

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1 Both Corrective Reading and Corrective Spelling are published by SRA, a division of Macmillan/McGraw-Hill, 800/843-8855.

[2] An effect size is a standard means of expressing achievement gains and losses across studies, showing differences between experimental and control groups in terms of standard deviation. An effect size of +1.00 indicates that the experimental group outperformed the control group by one full standard deviation. To give a sense of scale, this would be equivalent to an increase of 100 points on the SAT scale, two stanines, 21 NCEs (normal curve equivalent ranks) or 15 points of IQ (Fashola and Slavin, 1996)—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (in range with mainstream America). Because of differences among study designs and assessments, this can only be considered a "rough" measure of comparison. In general, an effect size of +.25 or more is considered educationally significant.

[3] Darch, C., Gersten, R. & Taylor, R. (1987). "Evaluation of Williamsburg County Direct Instruction program: Factors leading to success in early elementary programs," *Research in Rural Education, 4.*

[4] See footnote 2.

[5] Haring, N.G. & Krug, D.A. (1975). "Evaluation of a program of systematic instruction procedures for extremely poor retarded children," *American Journal on Mental Retardation.*

[6] Lloyd, J., Cullinan, D., Heins, E.D. & Epstein, M. (1980). Direct Instruction: Effects on oral and written language comprehension. *Learning Disabilities Quarterly, 3.*

[7] Lum, T. & Morton, L.L. (1984). Direct Instruction in spelling increases gain in spelling and reading skills. *Special Education in Canada, 58.*

[8] Adams, G. L. & Engelmann, S. (1996). *Research on Direct Instruction: 25 Years Beyond DISTAR.* Seattle, Wash.: Educational Achievement Systems.

[9] School Board of Broward County, Florida. (August 1996). *Alliance of Quality Schools Evaluation Report.*

Early Steps (ES)

Grades Covered	Grade 1.
Curriculum Materials	Participating schools are provided with sets of small graded books for early first grade to late first grade.
Instructional Support/ Professional Development	Early Steps provides professional development for first-grade teachers and Title I tutors. Other school personnel, such as coaches, music and art teachers, and the principal can also be trained. Teachers are able to enroll in the program as a graduate class, beginning with weekly meetings during the first month of school followed by monthly meetings for the rest of the school year.
School Reform/ Restructuring Assistance	Not applicable.
Role of Paraprofessionals	Classroom paraprofessionals and other non-certified staff can be included in some of the day-to-day operations of the program but cannot serve as actual tutors.
Cost of Implementation	Start-up costs for a program serving 30 students—including student materials and teacher training—are estimated at between $15,000 to $25,000. Professional development represents the bulk of these costs, with a trainer conducting partial-day site visits approximately 10 times during the school year to conduct short seminars. These costs (which can be shared with neighboring program schools) include a $1,000 a day honorarium for the trainer, plus travel and expenses. Additional costs may include release time, depending on the type of implementation.
Preliminary Results*/ Effect Size	While results for this program are still preliminary, early indications are promising. One pilot study compared program students with a matched control group at the end of first grade. Early Steps students outperformed their counterparts significantly (ES=+.47, word recognition; +.80, spelling; +.77, passage reading). One year later, Early Steps students were found to have maintained this gap (ES=+.65, word recognition; +1.2, word attack; +1.0, passage reading). ** To give a sense of scale, an effect size of +1.00 would be equivalent to an increase of 100 points on the SAT scale or 15 points of IQ—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (the norm for mainstream students).*

Early Steps (ES) is an early intervention/tutorial program in reading and language arts for first-grade students who are at risk for reading failure. The program was recently developed by Darrell Morris, professor at Appalachian State University and developer of the Howard Street Tutoring program, a reading tutorial for second- and third-grade students. Unlike Howard Street, which relies primarily on volunteers, Early Steps utilizes only certified staff to work one-on-one with

struggling students.

Like Reading Recovery, one of the most popular first-grade reading tutorials, ES concentrates on trying to ensure that all first-grade students acquire the concepts and skills that will help them become fluent readers. The program aims to catch and correct reading problems before students enter the post-primary grades and begin to experience real failure. Early Steps employs a balanced approach to the teaching of reading, incorporating explicit instruction in phonemic awareness and phonics, as well as the reading experience activities favored by Reading Recovery. ES tutors work with students in reading new books at their instructional level, re-reading familiar texts, writing and learning problem-solving strategies that can be used to tackle difficult words.

There have only been two evaluations of Early Steps studies, thus far. Both focus on the use of the program as an after-school tutorial, rather than as an in-school intervention.

Main Features

Each Early Steps tutoring session lasts 30 minutes, and is divided into four main sections:

Reading—During this portion of the session, the teacher and tutor work together with the student, who re-reads a familiar book that has been introduced during a previous session or class. This activity, which typically lasts about eight minutes, is designed to help the student gain fluency, speed, accuracy and comprehension when reading. Children are also taught metacognitive skills and learn to become aware of how they are used when encountering difficult words.

Word study—During the word study portion of the tutorial, children are taught phonemic awareness, phonological and metalinguistic skills that can help them decode unfamiliar words successfully. During the early stages of literacy, students are introduced to grapho-phonemic patterns, beginning with consonant sounds. This is followed by demonstrations of how consonants and vowels are combined to form common words. Students progress systematically through word study activities, from learning the letters of the alphabet to discriminating sounds to learning the relationships between graphemes and phonemes, matching sounds to picture names and, eventually, to word sorting. With word sorting, such as rhyming, students learn to distinguish visual and auditory patterns. Word study also addresses spelling by teaching about families of vowels (short and long).

Writing—ES students are encouraged to write their own sentences as a way to practice phonemic and metacognitive awareness skills as well as to encourage creativity. While writing each sentence, the student is instructed to speak each word aloud, then focus on specific letters and words. The tutor re-writes the sentence, then splices it. The student is then asked to put the sentence together in its original form. In this facet of the program, the child has the opportunity to see the relationship between sounds, letters, words and how they are combined to form meaningful sentences.

New reading—The final portion of the Early Steps tutorial involves the introduction of a new book, with text that is slightly more difficult than in the book that began the lesson. Before the student begins reading, the teacher encourages him/her to discuss possible main ideas, using pictures, vocabulary and other features as cues for gaining meaning. As children begin to read and encounter new and unfamiliar words, they are encouraged to employ the decoding and comprehension skills and strategies they have learned. Although some students make many initial errors, they are taught to self-correct for these mistakes. The instructor is expected to observe for an appropriate period during these activities before providing any direct intervention.

Results

Although more data exist on related programs, such as Howard Street Tutoring, the Early Steps results are still preliminary. There has been only one independent evaluation of the program.[2] This study, conducted in Kalispell, Montana (see "Case Study," below), involved a total of 49 students, with 23 in the experimental group and 26 in a matched control group. All students were in the first grade and were reading in the bottom 20th percentile of their classes. At the onset of the study, there were no significant differences between students in the two groups. Students in both groups received tutoring, the experimental group using Early Steps and the control group using generic methods. At the end of the first grade, students were assessed on spelling, word

recognition and passage reading skills using program-aligned measures. In second grade, students were assessed again to see the extent to which they had maintained any gains. Second graders were assessed with Woodcock Reading Mastery (WRMT-Revised, G), testing for word identification, word attack and passage reading skills.

At the end of the first year, Early Steps students outscored control students in spelling, word recognition and passage reading (ES=+.47, +.80 and +.77). When the students progressed to the second grade, they were assessed again to see the extent to which they would retain the skills that they had learned. At the end of second grade, ES students outscored control students in word recognition, word attack and passage reading by ES=+.65, +1.2 and +1.0, respectively.[3]

Case Study

Kalispell, Montana—The only independent study of Early Steps was conducted in Kalispell, Montana, a small school district with many lower- and middle-class Caucasian families attending Title I schools. In general, the students selected into the study were among the most economically disadvantaged in the district. All students in the study were also performing in the lowest 20th percentile of their class in reading and on related tasks, such as alphabetic knowledge, spelling, word attack and recognition of words in context. Students were assigned to two matched groups, receiving different types of tutorial interventions. After one year, students who had been taught using Early Steps significantly outperformed their peers in reading assessments. In addition, 52 percent of the Early Steps students were found to be reading at or above grade level, compared to 23 percent of students in the control group.

Considerations

While the research on Early Steps is still preliminary, it appears to be a program that can help schools deliver effective one-on-one tutorial interventions to low-performing first-grade readers. The program focuses on improving the reading and language arts skills of the lowest 20th percentile of students, using specially trained certified teachers and Title I tutors to deliver instruction. For effective implementation, all ES tutors must receive extensive professional development from program staff. Teachers are required to attend an intensive initial training session before they begin to work with students, in addition to follow-up workshops held during the year.

Early Steps' apparent effectiveness can be attributed to its balanced and comprehensive approach to reading instruction—an approach that provides the lowest-achieving students with individualized attention from and practice with trained and certified tutors. The program was designed to complement and supplement a broad range of primary reading programs. Participating schools are provided with quality professional development for tutors, as well as a framework for delivering a carefully paced and structured series of tutorial lessons. The lessons were designed to reflect the research base on beginning reading, incorporating both direct instruction in the basic skills of phonemic awareness and phonics, and the literature-based instruction that can help build background knowledge and improve student comprehension and vocabulary. Initial data indicate that this is a mix that works. Research shows significant improvement in the reading skills of the lowest quintile of first-grade students in the program. It should also be noted that the success rate with the bottom tier of these at-risk students was even higher.

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Santa, C. M. & Hoien, T. (1998). *An Assessment of Early Steps: A Program for Early Intervention of Reading Problems.* Kalispell, Mont.: Kalispell School District.

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[1] An effect size is a standard means of expressing achievement gains and losses across studies, showing differences between experimental and control groups in terms of standard deviation. An effect size of +1.00 indicates that the experimental group outperformed the control group by one full standard deviation. To give a sense of scale, this would be equivalent to an increase of 100 points on the SAT scale, two stanines, 21 NCEs (normal curve equivalent ranks) or 15 points of IQ (Fashola and Slavin, 1996)—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (in range with mainstream America). Because of differences among study designs and assessments, this can only be considered a "rough" measure of comparison. In general, an effect size of +.25 or more is considered to be educationally significant.

[2] Santa, C. M. & Hoien, T. (1998). *An Assessment of Early Steps: A Program for Early Intervention of Reading Problem.* Kalispell, Mont.: Kalispell School District.

[3] See footnote 1.

Exemplary Center for Reading Instruction (ECRI)

Grades Covered	Can be used in grades 1-12, with a primary focus on the elementary grades.
Curriculum Materials	As a reading intervention program used by reading specialists and teachers, ECRI requires six implementation guides, a family liaison guide, and worksheets for each ECRI tutor. Parents and peers need only one implementation guide, the family guide and worksheets.
Instructional Support/ Professional Development	For full classroom implementations, teachers are provided with a five-day seminar on ECRI instructional techniques, effective scheduling of class time, and methods for diagnosing and correcting reading problems. During the seminar, participants observe demonstrations, teach sample lessons, and pass proficiency tests in the use of new approaches. Intermediate and advanced seminars may also visit implementation sites to demonstrate and/or monitor implementation. To implement the reading intervention program only, teachers and reading specialists attend a three-day seminar; parent, volunteer and peer tutors attend a one-day seminar; and ECRI proficient teachers attend a half-day seminar.
School Reform/ Restructuring Assistance	None.
Role of Paraprofessionals	Classroom paraprofessionals (as well as volunteers) can be trained to work as ECRI tutors.
Cost of Implementation	ECRI can be implemented as a classroom program across the entire school. However, as a reading intervention only, start-up costs for a program serving 30 students—including training and materials—are estimated at between $1,800 and $3,500. Costs of materials are negligible, with staff development representing the largest expense. These costs (which can be shared with neighboring program schools) include a $600 a day honorarium for a trainer, plus travel and expenses. Additional costs may include release time, depending on the type of implementation.
Results*/Effect Size[1]	The major evaluation of ECRI as a remedial (after-school) program showed ECRI students (who were formerly performing below grade level) outscoring control students on the Durrell Analysis of Reading Difficulty with an effect size of +1.21. **To give a sense of scale, an effect size of +1.00 would be equivalent to an increase of 100 points on the SAT scale or 15 points of IQ—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (the norm for mainstream students).*

The Exemplary Center for Reading Instruction (ECRI) is a research-based, instructional program designed to improve students' ability to read, understand and communicate in English. Developed in the 1960s and 70s by a former Utah school district administrator, Ethna Reid, the program focuses on pre- and inservice professional development for teachers, and is meant to strengthen and supplement, not replace existing curricula. First developed as a literacy instruction program, ECRI has been implemented across all subject areas, with a focus on training teachers to establish high levels of student mastery, maintain on-task behavior, and provide ample time for hands-on work and practice.

Although used primarily to enhance in-school reading and language arts instruction, ECRI can also be implemented as an after school or summer school reading intervention program. The intervention program, developed with special education funds from the Utah state education department, was originally designed to serve students with severe learning and behavioral problems. Today, ECRI's intervention program in Salt Lake City operates through the University of Utah's Division of Continuing Education with the goal of improving reading/writing/study skills of students from throughout the area. Typically, students in an after-school ECRI program attend 90-minute classes three evenings a week for five weeks. (They can register for as many as six sessions during the regular school year.)

Main Features

Instructional approach—ECRI teachers learn strategies for instruction in word recognition, vocabulary, study skills, spelling, literature, penmanship, literal, critical, and interpretive comprehension, and creative and expository writing. Teachers are trained in the use of "directives" (scripted lessons), designed to help increase student motivation, make a more efficient use of class time, and introduce multisensory instructional techniques. Skills are taught in a careful sequence, which attempt to move students to mastery at the fastest possible pace. Once teachers are comfortable with the ECRI instructional approach, they are encouraged to use its techniques across subject areas.

Teaching methods—For 80 to 120 minutes daily, students are grouped by reading level and taught using a three-step process: (1) First the teacher demonstrates and models new skills for students. In a typical lesson, teachers review previously learned material and introduce new concepts using at least seven methods of instruction, teaching new vocabulary words, one new comprehension skill, a new study skill, and a new grammar/composition skill. (2) The teacher prompts students to check for understanding. Attaining high levels of rapid, accurate responses from all students is a core ECRI strategy, and teachers are taught to diagnose and correct problems quickly when there are errors/no responses. Teachers gradually reduce prompts as students respond correctly without help. (3) During a practice period, students work individually with supervision, and teachers hold individual conferences for re-teaching skills, test for mastery, and conduct small group discussions.

Student mastery—High levels of student mastery (correct responses of 83 to 100 percent) are expected from all students. Students demonstrate mastery through class participation, small-group discussions, written work and regular curriculum-based assessments (oral or written), which have been developed by ECRI staff for use with most popular basals and anthologies. Student progress is measured individually, with each student allowed to proceed to the next skills sequence once they have demonstrated mastery of previous material.

Student responsibility—ECRI requires that each student take active responsibility for and help to track his or her own learning by, for example, scheduling study time. Students are taught how to diagnose and correct for their own possible errors, and learn to judge when they are ready to be assessed.

Results

ECRI can be used as a program to strengthen regular classroom instruction or as a remedial intervention. There have been more than 20 years of field tests to demonstrate ECRI's effectiveness in helping to raise student achievement in reading and language arts, with benefits found for students from all socio-economic, racial and ethnic backgrounds.

Research shows that the program is effective with regular education students. In addition, achievement gains have been found for Title I, remedial and special education students, as well as for students who don't qualify for special education but who still have special needs. In studies of student achievement effects, special education students made normal curve equivalent (NCE) gains ranging from +7.76 to +23.29. Students receiving Title I services posted NCE gains from +7.99 to +25.66. And finally, students eligible for remedial services made gains ranging from +6.41 to +11.60.[2]

The main evaluation of ECRI as an after-school program used volunteers to tutor two groups of randomly assigned students who were experiencing reading difficulties. The experimental group was taught by parents who had been trained to use ECRI, while the control group was taught using a generic reading intervention. ECRI students received lessons in reading, writing, and spelling. At the end of the school year, students in both groups were tested using a standardized test (Durrell Analysis of Reading Difficulty), which showed that ECRI students had made significantly greater gains (ES +1.21).[3] The ECRI tutored group also outscored control students on each of the Durrell test scores.

A second study included students from grades 2 to 12. Prior to ECRI, remedial students had a shockingly low achievement gain of only three months (.3) for each year in school. Once ECRI was implemented, schools saw gains of 17 months in the Gates-MacGinite test of oral and silent reading rates, and gains of 25 months in oral reading comprehension and spelling.[4]

Another study of the use of ECRI as a remedial reading program showed the results of students in grades 1 to 6. This study included 114 students who were not reading on grade level. At the end of the school year, after approximately 45 hours of ECRI instruction, results showed NCE gains in all grades, ranging from 11 to 19.88 NCE scores.[5]

An additional study of the use of ECRI as a remedial program involved 17 students in Hawaii in grades 2 to 4. At the end of the first year, the students showed NCE gains of 14.71.[6]

Case Study

Cameron Elementary School (Fairfax County, Virginia)—In Fairfax County, Cameron Elementary School's reading scores were below average, and well below those of many schools in the district. With as many as 40 percent of students suffering from low reading achievement, the school decided to implement ECRI as a summer school intervention. By the end of the summer, not only had students in the 4th and 6th grades increased their scores by 10 points, but they also ranked at or above the national average on standardized tests.

Considerations

At the heart of ECRI's remarkable record of success is an effective and replicable professional development program. Initial training in basic ECRI techniques extends over five full days, including lecture and practice sessions, preparation of material for classroom use, and simulated teaching. Advanced training is available, but not required. (Training in the use of ECRI techniques to teach subject areas other than reading/language arts, such as history and science, is also available.) In addition, for a $600-a-day honorarium, ECRI staff members are available for periodic site visits to monitor implementations and model specific teaching strategies.

The program's goal is to move each student to mastery of learning as quickly as possible, utilizing an individualized, highly interactive and teacher-intensive approach to instruction. Teachers and paraprofessionals should be aware of—and prepared for—ECRI's fast pace, as well as its use of scripted "directives." It is important to stress, however, that it is not the directives, but proper training in their use and the instructional techniques that they embody, that account for the program's success.

Selected Resources

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The Reader, the newsletter of the Exemplary Center for Reading Instruction, can be found at www.xmission.com/~ereid/reader.htm

For More Information

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Internet: www.xmission.com/~ereid/ecri.htm

[1] An effect size is a standard means of expressing achievement gains and losses across studies, showing differences between experimental and control groups in terms of standard deviation. An effect size of +1.00 indicates that the experimental group outperformed the control group by one full standard deviation. To give a sense of scale, this would be equivalent to an increase of 100 points on the SAT scale, two stanines, 21 NCEs (normal curve equivalent ranks) or 15 points of IQ (Fashola and Slavin, 1996)—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (in range with mainstream America). Because of differences among study designs and assessments, this can only be considered a "rough" measure of comparison. In general, an effect size of +.25 or more is considered to be educationally significant.

[2] See footnote 1.

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Lindamood-Bell

Grades Covered	K-12 and beyond (adulthood).
Curriculum Materials	There are several related programs, with various types of materials. Most supply some combination of teacher manuals, manipulatives, CD ROMs, videos, kits and supplemental materials to help schools design individualized lesson plans.
Instructional Support/ Professional Development	Introductory courses in the various components under the systemic literacy development model are offered. Districts or individual schools can be trained on how to use the program. Initial training includes an overview lecture, followed by intense teacher training. Levels of training are from basic introductory training through consultant certification. Teachers are expected to implement the program after the initial training. Schools involved can be a part of a network that allows them to pursue certification using the Lindamood-Bell method.
School Reform/ Restructuring Assistance	Not applicable when used as a remedial program. One school-based version of the program, the Human Learning Model (HLM), can be implemented as a schoolwide reform model including some limited restructuring assistance.
Role of Paraprofessionals	Determined at the school level.
Cost of Implementation	Teacher training represents the major cost of implementation, estimated at $115 per teacher per day, with estimates for materials at about $350 per teacher. For a schoolwide HML implementation, the estimated cost of training and materials range from between $35,000 and $50,000 a year over the first two years.
Preliminary Results	This is an approach with extensive research showing its efficacy in treating severe reading disabilities in therapeutic (clinical) settings. More recently, it has also been used as the foundation for a variety of school-based programs. The data on these classroom adaptations, while still preliminary, are very encouraging. *For more details, please see the "Results" section, below.*

A linguist and a speech pathologist, Charles and Patricia Lindamood, and their colleague, Nanci Bell, developed the Lindamood-Bell reading intervention method beginning in the late 1960s. The approach was designed to compensate for the fact that some students with reading disabilities have unreliable auditory perceptions by teaching them alternate ways to perceive the various sounds (phonemes) that make up all of the words in the English language.

In addition to the original program, Auditory Discrimination in Depth (ADD), a number of adaptations for struggling regular and special education students are now available. The Lindamood Phonemic Sequencing Program (LiPS) is a highly structured reading and spelling tutoring program for students from kindergarten through adulthood, while the Human Learning Model (HLM) can be implemented as a schoolwide approach. Other related classroom-based programs include the Visualizing and Verbalizing Program, the Seeing

Stars Program, the Drawing with Language Program, and the On Cloud Nine Math Program.

Main Features

Individualized approach to teaching—Students who are referred to the program are administered an initial needs assessment, a battery of tests designed to explore the reading skills of the students, their strengths and weaknesses. This battery includes the results of any state or district assessments that may have been previously administered. Once students have been assessed, the intervention team designs an education plan specific to the needs of each student. The results of the assessment determine the length of time that the student will be involved in the program, the types of lessons to be taught, and the individual skills that will be focused on in each lesson. Although lessons are individualized, there are certain underlying characteristics, shared with other multisensory, structured reading intervention approaches. Specifically, each lesson is structured, progressive, cumulative, cognitively based and sequential.

Auditory Discriminatory in Depth—This component of the approach is taught only to those students whose initial assessments identify as in need of it. ADD teaches students to perceive sounds in isolation and in context and how to produce them. In working with students, teachers who implement ADD/LiSP are able to distinguish between sounds that children are unable to distinguish due to lack of practice and sounds that children are unable to distinguish due to cognitive or physical disabilities or misalignments. Students are taught not only to hear and make the sounds, but are also taught to pay attention to the movement of their mouths when they attempt to produce the sounds. When the students eventually learn to write the sounds (orthography), they are already able to distinguish the sounds in isolation and in context. The approach teaches students how to self-correct, teaching them skills that they will eventually use to label sounds (phonemes) that they hear—in isolation, in context (embedded in words) and eventually in print.

Grapho-phonemic correspondence—Students are taught that there are 44 distinct sounds that make up the English language and are shown the relationship between these sounds (phonemes), letters (graphemes) and letter combinations, using structured lessons and controlled word lists. Once they have mastered the building blocks, students are gradually presented with the associations between letters, blends and words, with the relationship between sound and text explored progressively. Students are taught both consistent and inconsistent features of reading, writing and spelling, such as digraphs, and diphthongs, in a controlled, progressive, and structured manner.

Sounds and meaningful words—As the students begin to understand the relationship between graphemes and phonemes, they are also taught to relate these to dictation: the ability to represent what is perceived aurally and translate it into written letters, words and sentences. The approach stresses the multi-sensory correspondence between spoken and written language and the transmission of meaning. Students are taught this approach in a systematic manner.

Comprehension—Attention to comprehension is another main feature of many Lindamood-Bell programs. Reading comprehension is enhanced by sequential, cumulative concept development.

Results

Most research on the effectiveness of the Lindamood-Bell approach has focused on its use as an individualized instructional or tutorial program, usually in a therapeutic (clinical), non-school, setting. Thus, results on its school-based applications are still preliminary.

Several studies indicate that this approach can be used effectively with dyslexic and severely disabled poor readers of all ages. The same techniques have also been modified for use with small groups in classrooms or even for whole class instruction. One study[1] compared the reading achievement of two groups of struggling first-grade readers. The experimental group was taught using ADD for four months, then phased back into the regular reading program. At the end of first grade, the ADD students outscored control students on multiple reading measures. A follow-up study showed that these achievement gains were sustained through the fifth grade. Another study[2] found it to be an effective remedial program for middle-grade students (with

an average age of 10) with poor reading skills. And recently, researchers examined the effect that different interventions had on reading-disabled first-grade students.[3] The students were randomly assigned to one of four programs. At the end of the second grade, students in the Lindamood group significantly outscored other students on program-aligned measures of reading ability.

Case Study

Santa Maria, California—One of the earliest independently documented classroom applications of Lindamood-Bell was an experiment in Santa Maria, Calif., a school district with a large population of children of migrant farm workers who had poor English language skills. A first-grade classroom teacher was trained in the method and used it exclusively until January, when students first received readers. A control class, to be taught by regular methods, was selected by administrators and assigned to a teacher whose students consistently earned the best test results in the district. At the end of first grade, the Lindamood students could read real words at an average of two years above grade level. They were one year above in spelling. On nonsense word decoding, they were six years above grade level, with the lowest-scoring child at the third-grade level. In follow-up studies, these gains appear to be sustained. At fifth grade, the scores for reading comprehension, spelling and nonsense word decoding for the experimental group ranged from 63.6 to 81.7 percentile points, while scores for their peers ranged from 39.4 to 56.5.[4]

Considerations

The Lindamood-Bell method was designed as a therapeutic (non-school) intervention for children with severe language processing disabilities (including dyslexia, cognitive deficits, dysgraphia and dyscalalia). The approach is structured and progressive, and is designed to move at the pace of the child. Depending on the severity of the problem, one child could progress through the program in a few months, while another could take much more than a year to master the same set of skills.

As a remedial program, Lindamood-Bell is grounded in theory, research and practice. The theory posits that many students with serious reading problems suffer from auditory processing difficulties and can be taught compensating strategies to address these difficulties. Research has shown that many struggling readers need more than a standard reading program. The practical component of Lindamood-Bell is that theory and research have been translated into a comprehensive program that can be used to train tutors and teachers, as well as to design curriculum for use with students.

In addition to its clinical and remedial applications, the approach has also been adapted for general classroom use with regular-education students. The latest adaptation of the program, the Human Learning Model, was designed for classroom and schoolwide use, and also for use as an early-intervention (rather than as a remedial) program. While there is still limited research on the approach's classroom (rather than clinical or remedial) effectiveness, initial indications are very encouraging.

The approach is related to a larger family of therapeutic reading interventions that also follow a structured, multisensory approach to teaching reading. Among the best known are those in the Orton-Gillingham (OG) family of programs. The main difference between the two groups of programs is that, while OG teaches students to make sounds before they write them, Lindamood first teaches students to perceive the sounds. Another distinguishing feature is that a comprehension component is an inherent part of most Lindamood programs.

Selected Resources

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For More Information

Lindamood-Bell Learning Processes, 416 Higuera Street, San Luis Obispo, CA 93401.
Phone: 800/233-1819. **Fax:** 805/541-8746.
Internet: http://www.lblp.com.

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Reading Recovery (RR)

Grades Covered	Grade 1.
Curriculum Materials	A set of professional books and a set of approximately 600 "little books" for children are provided. Texts are selected from many early reading series and from trade books of children's literature.
Instructional Support/ Professional Development	All teacher leaders (school-level teachers and trainers) are required to complete a year of specialized academic coursework at selected local universities. Instructors of teacher leaders (district-level trainers) are also required to take a year of university classes. Only certified teachers who have received this training are recognized as Reading Recovery tutors. In-service professional development is also provided, including two annual conferences, a three-day winter conference, and a four-day summer institute for teacher leaders.
School Reform/ Restructuring Assistance	Some assistance is available upon request.
Role of Paraprofessionals	Only specially trained, certified teachers are used as tutors. Thus, paraprofessionals may work in the classroom, but do not work directly with the program.
Cost of Implementation	Total estimated start-up costs vary from about $2,500 to $10,000 per student.[1] Costs include about $3,000 for installation of one-way glass, $2,000 for books and materials, and additional costs for tuition for the Reading Recovery teacher leader in training, estimated at $1,200. Other costs include release time (one teacher, tutoring part time, is able to work with about four students per semester).
Preliminary Results*/ Effect Size[2]	Research on Reading Recovery has been uneven and results have been mixed. At least two careful studies, however, show that, when properly implemented, the program can have significant, positive effects on some measures of reading achievement, with effect sizes ranging from +.57 to +.78. A small study of the Spanish-language version of the program—Descubriendo La Lectura—also showed positive effects. ** To give a sense of scale, an effect size of +1.00 would be equivalent to an increase of 100 points on the SAT scale or 15 points of IQ—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (the norm for mainstream students).*

Reading Recovery (RR) is a one-on-one pull-out tutorial for first graders who perform at or below the 20th percentile in reading. The program, developed in the 1970s by New Zealand child psychologist Marie Clay, is now in use in more than 9,000 schools across the United States.

Reading Recovery is intended to supplement regular classroom instruction in reading and writing. Low-performing students receive 30 minutes of daily tutoring from a trained, certified teacher using

methods and lessons that are proscribed, but not scripted, by program developers. The goal is to accelerate reading achievement so that struggling students can match the average performance level of their classmates. When a student has received the maximum number of sessions (60) or can read at a level comparable to their class average, he/she is discontinued from the program.

Main Features

Each Reading Recovery tutor works with about four students during a 12- to 20-week period. Each student receives a total of five sessions per week, which, although individualized, follow a fairly constant structure:

Roaming around the known—"Roaming around the known" is the program's introductory/diagnostic phase, which may last up to 10 sessions. Tutors use a variety of literature-based activities, including the reading of familiar books, to gauge students' functional literacy levels. If a student is judged to be making adequate progress by the end of this period, he or she is "accepted" into the program for the full course of treatment.

Reading a familiar book—First, the student rereads familiar books and stories. During this phase of the lesson, the tutor does not focus on correcting mistakes, and instead keeps a running record of student behavior, paying particular attention to errors, self-corrections and comprehension strategies. This information is then used to inform instruction.

Working with letters—Next, tutors work to extend students' letter and word knowledge. Depending on the student's proficiency level, activities might include identifying and naming letters of the alphabet, matching uppercase and lowercase letters, or putting letters together to form words. At more advanced stages, students write words in their workbooks and on the chalkboard.

Writing a story—Regular writing experience is another important feature of the program. With coaching from the tutor, students compose short messages and stories word by word, focusing on word analysis and spelling. Then students read their products aloud to the tutor. Next, the tutor reinforces concepts of language structure by selecting one of the child's sentences, cutting it up into individual words and asking the child to reassemble it.

Reading a new book—The final phase of the lesson involves the introduction of a new book. The student attempts to read the new text as independently as possible, with orientation and support from the teacher. Although students are taught to decode, the program places a heavy emphasis on the use of context clues and prediction in deciphering new text. After the student has finished reading, student and tutor will discuss the book and the reading strategies that were used. The book is then re-read during the following lesson as "familiar" text.

Results

In recent years, both Reading Recovery and the research into its effectiveness have become quite controversial. Although RR is one of the best known and most studied reading programs in America, critics point to several areas of concern. These include program costs, association with whole language approaches to reading instruction, selective use of data in regard to unsuccessful students, appropriateness of student assessment measures, and sustainability of results. The first two issues are addressed in the "Considerations" section, below. Here, we address the last three issues, which directly relate to research on program efficacy.

Although Reading Recovery was designed to serve the lowest-performing 20th percentile of first-grade readers, not every struggling student is accepted into the program. Students' initial sessions, referred to as "roaming around the known," were designed to serve a screening, as well as a diagnostic, purpose. Children who seem likely to fail, despite tutoring in RR—those not progressing at the desired pace after 10 lessons—may be referred to special education and removed from the program. In many RR evaluations, these students are never accounted for. Thus, the lowest of the low achievers may be included in reporting for the control group, but excluded from RR data. In fact, some RR evaluations may only include data for students who were "successfully discontinued" (graduated) from the program after the full 60 lessons.[3]

Second, in many evaluation studies, RR students and control group students (in studies where controls were used) are assessed using Reading Recovery-developed instruments. For some, this has raised questions of whether student gains are found

using standardized assessments.

And finally, there is debate over whether any benefits are sustained. In this case, the research has been mixed. Some studies indicate that RR students' achievement gains dissipate by the third or fourth grade. Other studies suggest that the program's benefits extend through fourth grade and beyond.

Despite the lack of conclusive longitudinal data and design problems with some of the research, there are a few strong studies indicating that a well-implemented Reading Recovery program can help low-performing students learn to read. At least two evaluation studies compare the achievement gains of all program and control group students, including those who were screened out of RR during "roaming around the known." Both showed positive results for Reading Recovery. One pilot study involved a within-school design, matching students in different classrooms at six inner-city schools.[4] A second study involved 12 schools in Columbus, Ohio.[5] In this study, students performing in the lowest 20th percentile in reading were randomly assigned to RR or a control group and tested using a battery of program-aligned assessments. Reading Recovery students significantly outperformed students in the control groups on all measures, with effect sizes ranging from +.57 to +.72.[6] A follow-up study indicates that these gains may not be sustainable, however. Students were assigned oral reading measures developed by the program. At the end of first grade, gains for RR students and the cohort group were ES +.72 and +.78, respectively. At the end of second grade, these gains were ES +.29 and +.46, respectively. At the end of the third grade, the results were ES +.14 and +.25, respectively.

In addition, a third, small study evaluated the effects of the bilingual version of Reading Recovery (Descubriendo La Lectura, or DLL).[7] Twenty-three DLL students outperformed 23 matched comparison students in a non-DLL school, with effect sizes ranging from +.097 to +1.71. When comparing these scores to those of a random sample of all students, DLL students also outperformed their peers who were not necessarily in need of DLL services.

Case Study

Arkansas—The state of Arkansas approved Reading Recovery for statewide use in 1988. From 1991 to 1994, 1,088 struggling students received the full RR program (defined as having received 60 lessons). Of those students, 940 (86 percent) attained grade level. Fifty-nine students who had successfully completed the program were followed for an additional two years. Compared to a random sample of non-RR students, the RR students tended to perform as well or better on measures of dictation, spelling and text reading in both the third and fourth grades.[8]

Considerations

Reading Recovery is an early intervention program with several strengths and weaknesses that faculty members should consider carefully. First, one of the most serious critiques of the program has been that it does not reflect the latest research consensus on beginning reading acquisition. Indeed, there are alternative programs that are more aligned with consensus research and contain more systematic, explicit instruction in phonemic awareness and phonics—i.e., RR encourages the use of context cues, rather than decoding, and tends to give students the keys to sound-symbol relationships only after they have encountered problems with text. Nevertheless, it's also true that RR has evaluation data showing it is a program that can be used effectively.

Second, RR may be prohibitively expensive for many schools—especially those with large numbers of students in reading failure. For example, it has been estimated that an average RR teacher only serves about seven students per year,[9] while start-up cost estimates range from $2,500 to $10,000 per student. Another problem for low-performing schools arises from the design of the program—i.e., it is intended as a means to raise the performance of the lowest-achieving 20 percent of students up to the class average. Obviously, this is of limited benefit to schools where overall average reading levels are unacceptably low.

On the other hand, another frequent criticism actually signals a great strength: The program requires extensive teacher training. According to a recent report from the National Research Council,[10] "Despite the controversies regarding the efficacy of Reading Recovery, a number of intervention programs owe their design features to it, and it offers

two important lessons. First, the program demonstrates that, in order to approach reading instruction with a deep and principled understanding of the reading process and its implications for instruction, teachers need opportunities for sustained professional development. Second, it is nothing short of foolhardy to make enormous investments in remedial instruction and then return children to classroom instruction that will not serve to maintain the gains they made in the remedial program."

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For more information

Reading Recovery Council of North America, 1929 Kenny Road, Suite 100, Columbus, OH 43210 **Phone:** 614/292-1795. **Fax:** 614/292-4404. **Email:** bussell.4@osu.edu **Internet:** http://www.readingrecovery.org.

[1] Alliance for Best Practices in Education Policy, Education Commission of the States, 1998 brief on Reading Recovery.

[2] An effect size is a standard means of expressing achievement gains and losses across studies, showing differences between experimental and control groups in terms of standard deviation. An effect size of +1.00 indicates that the experimental group outperformed the control group by one full standard deviation. To give a sense of scale, this would be equivalent to an increase of 100 points on the SAT scale, two stanines, 21 NCEs (normal curve equivalent ranks) or 15 points of IQ (Fashola and Slavin, 1996)—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (in range with mainstream America). Because of differences among study designs and assessments, this can only be considered a "rough" measure of comparison. In general, an effect size of +.25 or more is considered to be educationally significant.

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Note on Program Selection Methods

The purpose of this series of program profiles is to provide background information about research-based programs that, when properly implemented, show promise for raising student achievement significantly.

For this effort, we enlisted the expertise of Dr. Olatokunbo S. Fashola, associate research scientist at the Johns Hopkins University Center for Research on the Education of Students Placed at Risk (CRESPAR). She surveyed the field of well-known programs and solicited recommendations for additional candidates, then attempted to obtain descriptive information and copies of all published evaluations—including study designs, field test data, and replication histories—from the developers of all programs, thus identified.

All available materials were then reviewed against the following criteria:

- When properly implemented, the program helps students acquire the skills and/or knowledge they need to successfully perform to high academic standards.
- The program has been effective in raising academic achievement levels, especially for "at-risk" students, based on independent evaluations.
- The program has been effectively implemented in multiple sites beyond the original pilot school(s).
- Professional development, materials and ongoing implementation support are available for the program, either through the program's developer, independent contractors or dissemination networks established by schools already in the program.

The standards by which program effectiveness was gauged are as follow:

- Evaluations demonstrate that the program can help produce educationally significant student achievement gains, as measured in effect sizes. An effect size is a standard means of expressing achievement gains and losses across studies, showing differences between experimental and control groups in terms of standard deviation. An effect size of +1.00 indicates that the experimental group outperformed the control group by one full standard deviation. To give a sense of scale, this would be equivalent to an increase of 100 points on the SAT scale, two stanines, 21 NCEs (normal curve equivalent ranks) or 15 points of IQ (Fashola and Slavin, 1996)—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (in range with mainstream America). Because of differences among study designs and assessments, this can only be considered a "rough" measure of comparison. In general, an effect size of +.25 or more is considered to be educationally significant.
- Ideally, evaluations include findings from matched comparison or large randomly assigned control group studies—or, failing this, compare the standardized test gains of program students to appropriate state- or nationally normed samples.
- Evaluations include data from third-party researchers using independently developed assessments, not only from program developers using program-designed tests.
- Evaluations include and/or compare data from multiple replication sites.

For programs in each category—in this case, remedial reading intervention programs—profiles were prepared only for those that came closest to meeting the above criteria. It should be noted, however, that there may be additional programs that qualify for inclusion but for which we were unable to locate adequate data; we hope to be able to include additional profiles for any such programs in future editions. It should be noted, as well, that in an effort to present a broader selection of programs, a few may have been included that came close to but didn't quite meet the above criteria. Where this is the case, the preliminary nature of the data has been noted in the profile text.

Finally, both as a courtesy and as a check for accuracy, a draft of each program profile was sent to the appropriate publisher or developer for review. Any new information provided to us during this review process has been incorporated.